Testimony

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Introduction

Good morning Chairman Wu, Ranking Member Smith, and Members of the Subcommittee. Thank you for inviting me to speak to you today.

Within the Department of Homeland Security (DHS), the Science and Technology (S&T) Directorate's Command, Control and Interoperability Division (CCI) uses a practitioner-driven approach to create and deploy information resources that enable harmonized and secure interactions among homeland security stakeholders.

Since the creation of the Department, there has been considerable progress in strengthening interoperable communications—the ability for all emergency responders to securely communicate with whomever they need to, when they need to, and when properly authorized to do so—across the nation. Having access to relevant, real-time and actionable information is vital to make tactical, strategic, and planning decisions that can prevent terrorist attacks, protect the homeland from natural or man-made disasters, improve response and recovery, and strengthen the resiliency of our communities. Emergency responders need to be able to respond to an incident using their own equipment and be able to communicate not just by voice, but to have the ability to exchange data, imagery and maps, and combine all of these sources of information as needed during an emergency.

The Office for Interoperability and Compatibility (OIC) within CCI works to ensure that the emergency response community—including local, tribal, state, and federal emergency responders—have the systems and equipment functionality that they need to save lives and safeguard the nation. Among its activities, OIC is authorized to accelerate, in consultation with other Federal agencies, including the National Institute of Standards and Technology (NIST), the private sector, and nationally recognized standards organizations, as appropriate, the development of interoperable communications[1] and develop a compliance assessment program[2].

System of Systems

A successful strategy for improving interoperability must be informed by practitioner input—that is, based on user needs and driven from the frontlines up. Practitioners include the end-user community that supports all aspects of securing the homeland during day-to-day operations and large-scale incidents or disasters. The existing response infrastructure is complex; there are more than 50,000 different emergency response agencies throughout the United States, each with its own local and state government regulations and requirements. Further, each locality has some form of legacy communication system and its own budget and planning lifecycles.

The existing public safety communication infrastructure in the United States represents, conservatively, an investment of more than $100 billion for voice systems hardware alone. These existing systems cannot be quickly or easily replaced.

One option to optimize resource effectiveness and eventually realize nationwide interoperability is a system of systems approach. The system of systems approach would allow separate agencies to join together using standards, compatible procedures, and training exercises without having to discard major investments in their existing systems, and enables emergency responders to use

[1] Intelligence Reform and Terrorism Prevention Act of 2004 § 7303, Pub. L. No. 108-458 (codified at 6 U.S.C. § 194)

[2] Department of Homeland Security Appropriations Act of 2007, H.R. Rep. No. 109-699

their own equipment to respond to an incident anywhere in the nation. By leveraging standards, emergency responders could communicate by voice and exchange data, imagery, video, and maps – creating situational awareness that improves response for daily operations and major incidents. Furthermore, the system of systems approach is more robust—it eliminates the risk that one failed technology or link will cause the entire system to fail.

Acceleration of Standards

The standards development process is integral to achieving interoperability. The ability to share critical emergency-related data—a map, a situational report, the status of medical resources—on demand and in real time is imperative in today's response environment. While this need has been apparent for years, *comprehensive* standards do not yet exist, because the systems and the range of standards required is complex.

Communication standards allow for the creation of multi-vendor systems that can bridge disparate technology and spectrum. In conjunction with development of the standard itself, it is just as essential that a compliance program for equipment testing be used. A robust compliance program ensures products are not only interoperable but also are implemented correctly by adhering to the standard.

Since 2004, OIC has partnered with NIST and the National Telecommunications Information Administration's Institute for Telecommunication Sciences to accelerate the development of the Project 25 (P25) suite of standards for narrowband communications. P25 standards help produce voice communications equipment that is interoperable, regardless of manufacturer. In addition to interoperability, P25 aims to promote more efficient use of spectrum while retaining compatibility with legacy systems, and scaling to support small-to-large incidents. While P25 consists of eight interfaces, the emergency response community prioritized the development of four interfaces:

- Common Air Interface (CAI)[3]
- Inter-RF Subsystem Interface (ISSI)[4]
- Console Subsystem Interface (CSSI)[5]
- Fixed Station Interface (FSI)[6]

Specifically, CAI and ISSI are fundamental to system and equipment interoperability, and thus are the highest priorities for both the emergency response community and DHS S&T.

P25 standards are developed through a voluntary consensus process[7]. The success of the overall effort is dependent on multiple factors including active participation from the user community

[3] This interface provides wireless communication between radios. The major CAI standards documents are complete except for trunked conformance test standard. The date for completion of this standard is currently uncertain pending a commitment of resources from manufacturers and support from the standards body.

[4] This interface joins two land mobile radio systems so that they act as one system and can support multi-jurisdictional, seamless roaming. The ISSI functional standards are complete, and ISSI commercial equipment is expected to begin deployment soon. The multi-vendor seamless roaming allowed by the ISSI will constitute a serious advancement over existing bridging technologies. Those technologies will remain important for bridging existing equipment, since systems are required to use the ISSI.

[5] This interface specifies the basic messaging to interface a console subsystem to a P25 RF Subsystem

[6] This interface specifies a set of mandatory messages supporting digital voice, data, encryption and telephone interconnectivity necessary for communication between a Fixed Station and P25 RF Subsystem

[7] National Technology Transfer and Advancement Act of 1995 § 12, Pub. L. No. 104-113 (codified at 15 U.S.C. § 272 note)

and equipment manufacturers, the standards meeting requirements defined by emergency responders, a willingness to build to the standard, and a comprehensive compliance assessment program to determine whether equipment follows the standard. The need for consensus throughout this effort often sets the pace for how quickly they are completed. A strong desire for progress and partnership among all stakeholders, manufacturers and emergency responders alike helps build consensus and ensure a steady pace.

Compliance Assessment

A comprehensive compliance assessment program is a key element to improving interoperable communications – it provides a process through which equipment can demonstrate that it correctly follows the standard and is able to interoperate with other equipment following the standard. When interoperability testing is combined with conformance testing, emergency responders can be assured that equipment conforms to the standard and will interoperate with all compatible equipment that correctly implements the standard, including equipment that was not tested. Furthermore, conformance testing helps provide increased confidence that equipment developed in the future will retain compatibility with legacy systems.

A few years ago, it was discovered through testing that much of the equipment advertised as P25-compliant was unable to interoperate with P25 equipment manufactured by other companies and, in some cases, even with earlier P25 equipment manufactured by the same company. In response, Congress authorized OIC to establish the P25 Compliance Assessment Program (CAP), in coordination with NIST. The P25 CAP allows emergency responders to confidently purchase and use P25-compliant products, and represents a critical step toward allowing responders to communicate using their own equipment.

Recognizing the need for an open and transparent process, the P25 CAP established a Governing Board (GB) to represent the collective interests of organizations that procure P25 equipment. Its membership consists of local, tribal, state, and federal government employees who are active in the operation or procurement of communication systems. The P25 CAP GB encourages members of the public to attend meetings and provide comments in order to increase stakeholder participation in the program. Before the P25 CAP GB publishes compliance documents, they solicit direct input from manufacturers, emergency responders, and other interested parties during an open comment period. The GB considers all comments in an ongoing effort to address both the requirements of the users and the concerns of the manufacturers. Through this open process, the GB continues to work towards the goal of creating the first commonly-accepted definitions of compliance across all interfaces.

Using testing standards published by P25, the P25 CAP aims to add quality, openness, and rigor by building on the product development testing already performed by manufacturers. The first group of laboratory assessments began in December 2008, and by April 2009, DHS recognized the first eight laboratories as part of the P25 CAP. A DHS-recognized laboratory is authorized to produce detailed test reports for P25 equipment. Four different manufacturers have had emergency communications equipment complete the P25 CAP process, which includes publishing Suppliers' Declaration of Compliance (SDoC) and Summary Test Reports.[8] The SDoC is the manufacturer's formal, public attestation of compliance with the standards for the

[8] As part of P25 CAP, SDoC and Summary Test Reports are required to be published on FEMA's Responder Knowledge Base Web site at https://www.rkb.us/

equipment and the Summary Test Reports provides the equipment purchaser with a summary of the tests conducted on the equipment along with the testing outcome.

Unfortunately, claims of compliance are not limited to the equipment that has completed the P25 CAP. This can lead to confusion among emergency responders and in the marketplace. DHS has attempted to clarify the definition of P25 compliant equipment through the *SAFECOM Guidance for Federal Grant Programs*. Specifically, the SAFECOM grant guidance states that "all new digital voice systems must be compliant with the P25 suite of standards." The grant guidance qualifies P25 equipment compliance to mean the completion of testing consistent with P25 CAP. Only under compelling circumstances may an agency use grant funding to purchase non-P25 equipment. The SAFECOM grant guidance continues to be used by interoperable and emergency communications grant programs outside of DHS, including the Department of Justice Office of Community Oriented Policing Services Technology Program.

Conclusion

Emergency responders' ability to communicate is vital to completing their mission, and the P25 CAP provides them with the credible facts and data to evaluate manufacturers' claims of standards compliance. The testing of P25 within communication equipment will improve interoperability as well as confidence in the suite of standards. In order to have a fully functional P25 CAP, at a minimum there must be comprehensive compliance testing for the CAI and ISSI. Conformance tests for the ISSI do exist and are under development for the CAI; however, the successful incorporation of conformance testing in the P25 CAP is dependant on manufacturer participation. Without this rigorous testing, a "P25 radio" is compliant in name only.

I appreciate the opportunity to testify before you today. I look forward to continuing to work with emergency responders and manufacturers, and I welcome the committee's interest and support of interoperable communications.

I look forward to answering any questions you may have.